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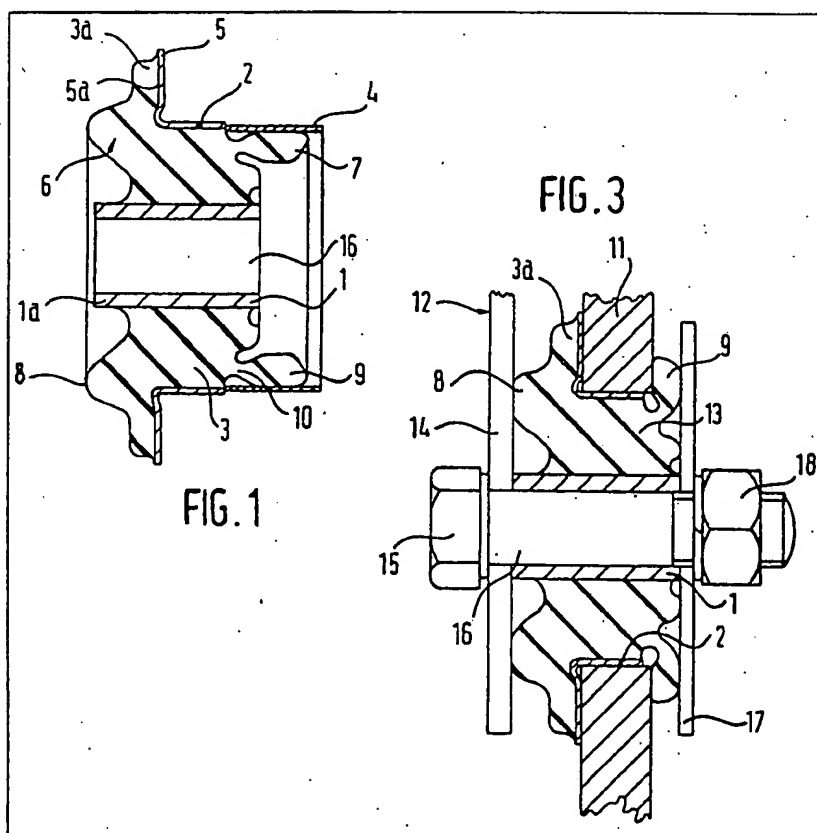
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(54) Improvements in or relating to
resilient mountings

(57) A resilient mounting for
connecting two components, for
example a cab structure to a vehicle
main frame, comprises an elastomeric
tubular bush (3) adapted to be
received in an opening in one of the
components and a through bore (16)
adapted to receive a member for
mounting the bush (3) on the other

component. The bush has a resilient
stop (7) comprising a circumferentially
extending skirt (9) which in the free
state as moulded is outwardly flared
to project axially and radially beyond
the body of the bush and a retaining
ring (4) to precompress the skirt (9)
to permit insertion of the skirt (9)
through the opening (13) during
assembly, the ring (4) being
removable thereafter to release the
precompression.



The drawings originally filed were informal and the print here reproduced is taken from a later filed formal copy.

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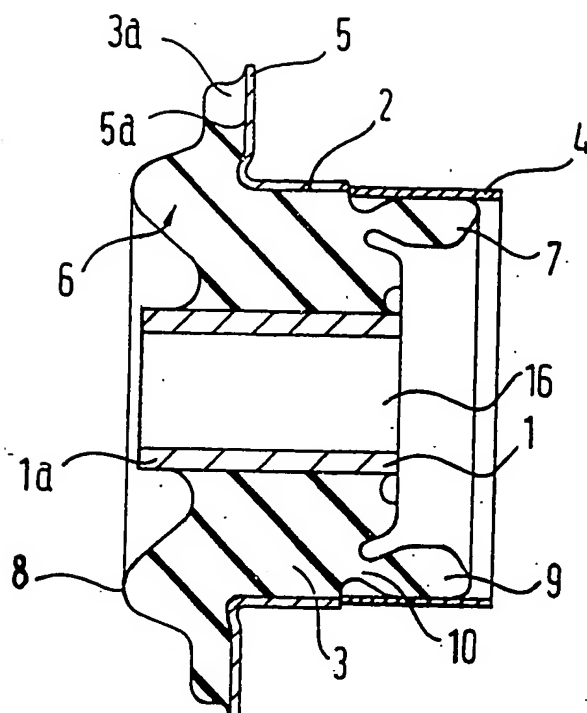


FIG. 1

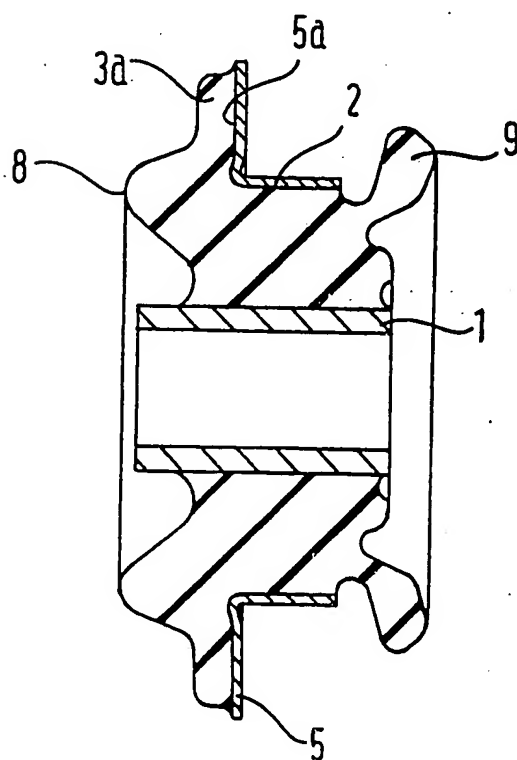


FIG. 2

SPECIFICATION

Improvements in or relating to resilient mountings

This invention concerns improvements in or relating to resilient mountings.

According to the present invention a resilient mounting for connecting two components comprises a tubular bush of elastomeric material having a main body portion adapted to be received in an opening in one of said components, a through bore adapted to receive a member for mounting the bush on the other of said components, a resilient stop for limiting relative movement between the components in use comprising a circumferentially extending skirt moulded integrally with the bush at one end thereof to project axially and radially beyond the main body portion of the bush and a retaining ring to precompress the skirt radially inwards so as to permit passage of the skirt through and location of the main body portion of the bush in the opening in said one component, the retaining ring being removable thereafter to release the precompression of the skirt.

Preferably the skirt is outwardly flared in a direction leading towards the free edge thereof i.e. the skirt is of generally conical profile. Preferably the skirt is connected to the main body portion of the bush by a web portion of reduced thickness as compared with the thickness of the skirt.

Preferably the bush is profiled to define in use a second resilient stop at the other end thereof. The second limit stop may comprise a circumferentially extending rib the free edge of which projects axially beyond the adjacent end of the main body portion of the bush.

The bush may act between and be in direct surface contact with the two components. Alternatively the bush may act between and be bonded to confronting surfaces of rigid inner and outer members, the inner member being adapted to receive the mounting member of said other component and the outer member being adapted for location in the opening in said one component.

Preferably the rigid outer member where provided has an abutment to limit the insertion of the main body portion into the opening in said one component. Conveniently the abutment comprises a radially outwardly directed collar formed integrally with the outer member at one end thereof. Preferably the elastomeric material of the bush is bonded to the collar on that side which is remote from the skirt.

Preferably the axial length of the inner member exceeds that of the outer member and the latter is conveniently located intermediate the ends of the inner member.

The retaining ring may be made of any suitable material, for example plastics material, metal, cardboard or fabric, which can retain the skirt in the precompressed condition without substantially deforming from the shape necessary to permit passage of the ring through the opening in said one component.

The invention will now be described in more detail, by way of example only, with reference to the accompanying drawings wherein:

Figure 1 is a longitudinal section of the mounting according to the present invention;

Figure 2 is a longitudinal section of the mounting shown in Figure 1 without the retaining ring, and

Figure 3 shows the mounting of Figure 1 installed.

The mounting shown in Figure 1 of the accompanying drawings comprises rigid inner and outer members 1 and 2 inter-connected by a resilient rubber bush 3, and a retaining ring 4 of plastics material.

The inner and outer members 1 and 2 are both cylindrical with the axial length of the inner member 1 exceeding that of the outer member 2 which is positioned intermediate the ends of the inner member. A radially outwardly directed collar 5 is formed integrally with the outer member at one end thereof and serves to locate the outer member during assembly as will be described in more detail later.

The rubber bush 3 is moulded between and bonds to the confronting surfaces of the inner and outer members 1 and 2. The rubber bush 3 also has a radially outwardly directed annular projection 3a bonded to the axially outer surface 5a of the collar.

Moulded integrally with the bush 3, one at each end, are resilient stops 6 and 7 which in use provide bump and rebound stops respectively.

The stop 6 comprises a circumferentially extending rib 8 the free edge of which extends axially beyond the adjacent end 1a of the inner member.

The stop 7 comprises a circumferentially extending skirt 9 connected to the main body of the bush 3 by a web portion 10 of reduced thickness as compared with the thickness of the skirt 9.

As shown in Figure 2 the skirt 9 as moulded is outwardly flared in a direction leading towards the free edge thereof to project axially and radially beyond the cylindrical body portion of the outer member 2. The free edge of the skirt also projects axially beyond the adjacent ends of the inner member 1.

The retaining ring 4 is cylindrical having a maximum diameter slightly less than that of the cylindrical body portion of the outer member 2. As shown in Figure 2 the ring 4 fits over the skirt 9 and precompresses the skirt 9 radially inwards. The ring 4 forms an extension of the cylindrical body portion of the outer member 2 to facilitate fitting of the mounting as will now be described in more detail with reference to Figure 3.

In use the mounting is used to connect two components for example to connect a cab structure to a vehicle main frame. One component indicated by the reference numeral 11 has an aperture 13 in which the cylindrical body portion of the outer member 2 is received. The other component indicated by the reference numeral 12

has a flange 14 carrying a bolt 15 which extends through the bore 16 of the inner member and is retained in position by a retaining flange 17 secured to the free end thereof by a nut 18.

- 5 To assemble the mounting the retaining ring 4 and cylindrical body portion of the outer member are inserted into and through the aperture 13 until the collar 5 abuts the component 11. The retaining ring 4 is then removed releasing the
10 precompression of the skirt 9. The bolt 15 is then inserted through the flange 14 and the bore 16 of the inner member and the retaining flange 17 fitted and secured by tightening the nut 18. The nut 18 is tightened until the ends of the inner
15 member 1 abut the adjacent flanges 14 and 17 as shown in Figure 3. In this position the rib 8 is axially compressed by the flange 14 and the skirt 9 is compressed between the flange 17 and the component 11. The rib 8 and skirt 9 which form
20 the resilient stops 6, 7 control relative axial movement of the inner member 1 relative to the outer member 2 caused by relative movement between the components 11, 12.

The bump and rebound characteristics of the
25 mounting can therefore be controlled by appropriate selection of the dimensions of the rib 8 and skirt 9 so as to vary the amount of precompression of these components when the mounting is assembled.

- 30 It will be apparent from the foregoing that the free edge of the skirt 9 as moulded has a diameter greater than that of the aperture 13 in order to ensure that the skirt is compressed between the component 11 and retaining flange 17 on
35 assembly thus preventing direct metal to metal contact on excessive axial movement between the components 11, 12.

It will be understood that without the retaining
40 ring 4 assembly of the mounting would be extremely difficult as a result of first having to compress the skirt 9 to enable insertion of the skirt into the aperture 13 and secondly having to
45 overcome the frictional resistance that would be encountered on passage of the skirt through the aperture 13, the frictional resistance being relatively greater as a result of the flared
construction of the skirt. The present invention readily overcomes these problems by the provision
50 of the retaining ring 4 which precompresses the skirt 9 so that the maximum diameter of the parts of the mounting to be inserted into and through the aperture 13 during assembly is less than that of the aperture.

The invention is not restricted to the above
55 described embodiment which may be modified in a number of ways, for example the mounting may comprise the above described bush 3 and retaining ring 4 without the rigid inner and outer members 1 and 2. In this construction the bolt 16
60 would be received in a through bore of the bush and the main body portion of the bush would be received in the aperture 13 so that the elastomeric material of the bush would be in direct contact with but not bonded to the bolt 16 or component
65 11 with the annular projection 3a or a similar

peripheral abutment being relied on to limit the insertion of the main body portion into the aperture 13.

- The rib 8 may be omitted and the bush profiled
70 to ensure a portion of elastomeric material is present to prevent direct metal to metal contact between the components 11, 12 as a result of relative axial movement therebetween, for example the annular projection 3a may be relied
75 on to prevent such direct contact.

CLAIMS

1. A resilient mounting for connecting two components comprising a tubular bush of elastomeric material having a main body portion adapted to be received in an opening in one of
80 said components, a through bore adapted to receive a member for mounting the bush on the other of said components, a resilient stop for limiting relative movement between the
85 components in use comprising a circumferentially extending skirt moulded integrally with the bush at one end thereof to project axially and radially beyond the main body portion of the bush and a retaining ring to precompress the skirt radially
90 inwards so as to permit passage of the skirt through and location of the main body portion of the bush in the opening in said one component, the retaining ring being removable thereafter to release the precompression of the skirt.

2. A mounting according to claim 1 wherein the skirt is outwardly flared in a direction leading
95 towards the free edge thereof.

3. A mounting according to claim 1 or claim 2 wherein the skirt is connected to the main body portion of the bush by a web portion of reduced thickness as compared with the thickness of the skirt.

4. A mounting according to any one of the preceding claims including a second resilient stop
105 at the other end of the bush.

5. A mounting according to claim 4 wherein the second resilient stop comprises a circumferentially extending rib the free edge of which projects axially beyond the adjacent end of the main body
110 portion.

6. A mounting according to claim 4 or claim 5 wherein the second resilient stop is moulded integrally with the bush.

7. A mounting according to any one of the preceding claims including means to limit
115 insertion of the main body portion into the opening in said one component.

8. A mounting according to claim 7 wherein the limit means comprises a circumferentially and radially outwardly extending abutment.

9. A mounting according to claim 8 wherein the abutment comprises a projection moulded integrally with the bush.

10. A mounting according to any one of the preceding claims wherein the bush acts between
125 and is bonded to confronting surfaces of rigid inner and outer members, the inner member being adapted to receive the mounting member of said other component and the outer member being

adapted for location in the opening in said one component.

11. A mounting according to claim 10 in combination with claim 8 wherein the abutment
5 comprises a collar formed integrally with the outer member.

12. A mounting according to claim 11 wherein the elastomeric material of the bush is bonded to the collar on that side which is remote from the
10 skirt.

13. A mounting according to any one of claims 10, 11 or 12 wherein the axial length of the inner member exceeds that of the outer member.

14. A mounting according to claim 13 wherein

- 15 the outer member is positioned intermediate the ends of the inner member.

15. A mounting according to any one of the preceding claims wherein the main body portion of the bush and the retaining ring are cylindrical.

- 20 16. A mounting according to claim 15 wherein the maximum diameter of the retaining ring is equal to or less than that of the main body portion of the bush.

17. A mounting substantially as hereinbefore described with reference to the accompanying drawings.

18. A vehicle incorporating a mounting according to any one of the preceding claims.